

**Traffic Solutions Pty Ltd**



**INDICATIVE SCHEME FOR A MIXED USE  
DEVELOPMENT, 241-245 PENNANT HILLS  
ROAD, CARLINGFORD**

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**TRAFFIC IMPACT  
ASSESSMENT**

8 Dec 2021

REF: 20.21.005

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## 1. INTRODUCTION

This report has been prepared to assess the traffic impact of the potential yield of a revised indicative scheme for a mixed use development at 241-245 Pennant Hills Road, Carlingford.

This assessment has been undertaken with reference to plans prepared by Kennedy Associates Architects, drawing numbers 100 – 126 and dated 24 September 2021.

The mixed use indicative development scheme that this report will assess proposes a potential yield of:

1. 97 residential units (comprising 5 x 1, 60 x 2 and 32 x 3 bedroom dwellings).
2. Child Care Centre with approximately 90 places and 850m<sup>2</sup> of floor area.
3. Gymnasium with approximately 520m<sup>2</sup> floor area.
4. Commercial with a total floor space of 1120m<sup>2</sup>.

The indicative plans indicate a single car parking basement area is proposed with 95 spaces. However, a second parking basement is likely to be required “once tenancies have been leased” to comply with onsite parking requirements. Vehicle access is proposed via a 11.5m wide driveway to Felton Road which also serves as access for a truck to remove refuse and also delivery/removalist vehicles. No vehicle access is proposed to Pennant Hills Road.

This report examines the traffic implications of the proposal and will assess the:

- Proposed vehicle access location.
- Estimate the traffic generation of each component of the total indicative scheme.
- Assess the potential impacts of the estimated traffic generation on the existing road network.

### 1.1 HISTORY OF SCHEME

The application was first conceived back in 2015 as a proposal to The Hills Council. Traffic Solutions Pty Ltd contacted Mr. Andrew King, Manager Traffic at that time to discuss the local traffic conditions to determine if there were any existing issues that Council was aware of. There were two issues arising from these discussions which were:

1. Parking issues along Felton Street at James Ruse Agricultural High school drop of and pick up times. During these times parking on both sides of the road reduced the trafficable area along Felton Road causing congestion.

2. Queuing along Baker Street from Pennant Hills Road intersection at peak school drop off and pick up times.

Since that time the parking congestion issue has been addressed by Council with the introduction of No Parking restrictions along the northern side of Felton Road along the school frontage for the hour at drop off and pick up times.

In 2017-2018 an application was made by Baptist Care and the adjoining site at 266 Pennant Hills Road (opposite Baker Street) to rezone the land to high density. This application assisted in resolving the traffic congestion issue at the Baker Street and Pennant Hills Road intersection with the approval of traffic signals at this intersection.

The Baptist Care development has since been approved and construction commenced on-site meaning that the installation of the traffic signals at Baker Street will be imminent.

More recently RMS and Council have also approved the installation of traffic lights at the intersection of Evans Road and Pennant Hills Road to better improve safety and traffic flow in the precinct.

The original Traffic assessment at the time was for a greater density on-site than that proposed currently and the application at the time involved use of both Pennant Hills Road and Felton Road as means of vehicle access onto the site and reduce the impact upon Felton Road.

Prior to preparing the original Traffic assessment the RMS were consulted about vehicle access to the site and the road widening at the eastern end of the site and the proposed additional road dedication in the south-western corner of the site. The RMS was willing to support access from Pennant Hills Road only for commercial usage mirroring the current site circumstance, however preferred vehicle access was for Felton Road access only.

Attached as Appendix C is a copy of the correspondence received from the RMS regarding vehicle access and road widening requirements.

The up-zoning application was not supported by The Hills Council and an application was lodged through Parramatta Council given the LGA boundary changes, with the application revised to only consider vehicle access from Felton Road that adopted the RMS preference for all vehicle access to be from Felton Road.

The opening of the M1 (Northconnex) tunnel has vastly reduced traffic flow along Pennant Hills Road given its diversion of trucks onto the M2 and the near completion of the light rail and Carlingford Station upgrade will further reduce car dependency in the precinct.

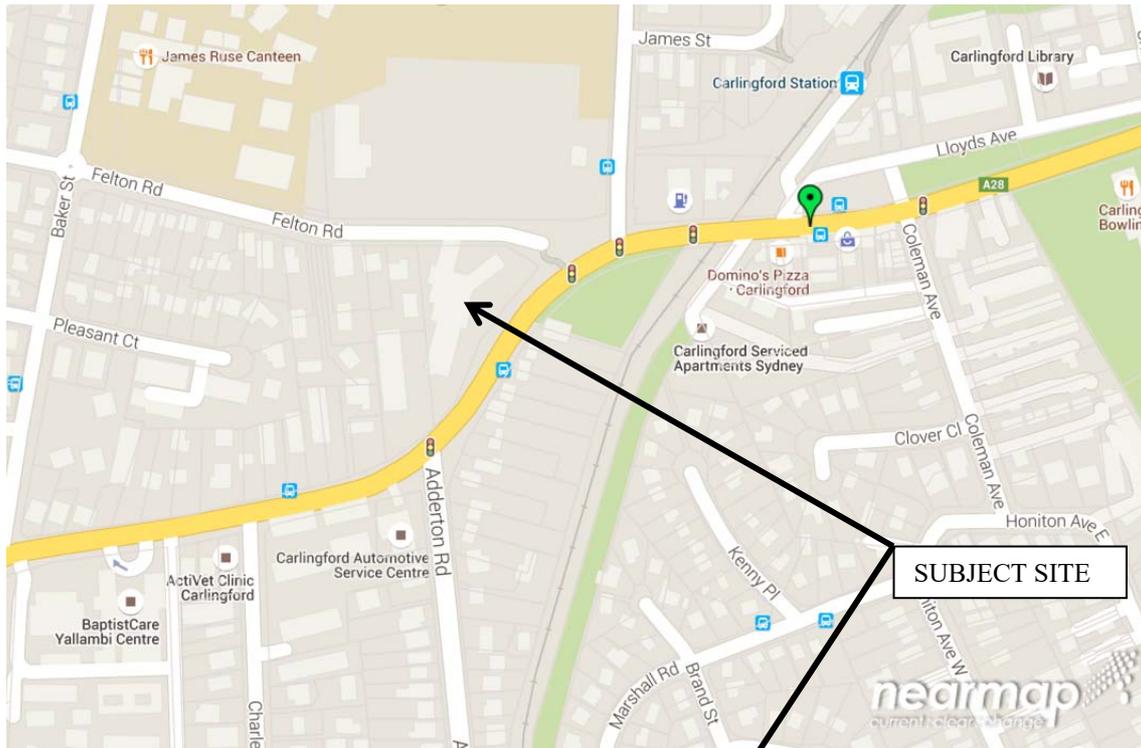
The proposal in its current form is considered to represent a workable and diluted density for the site achieved after consultation with Council and RMS.

## 2. EXISTING DEVELOPMENT

### 2.1 SITE

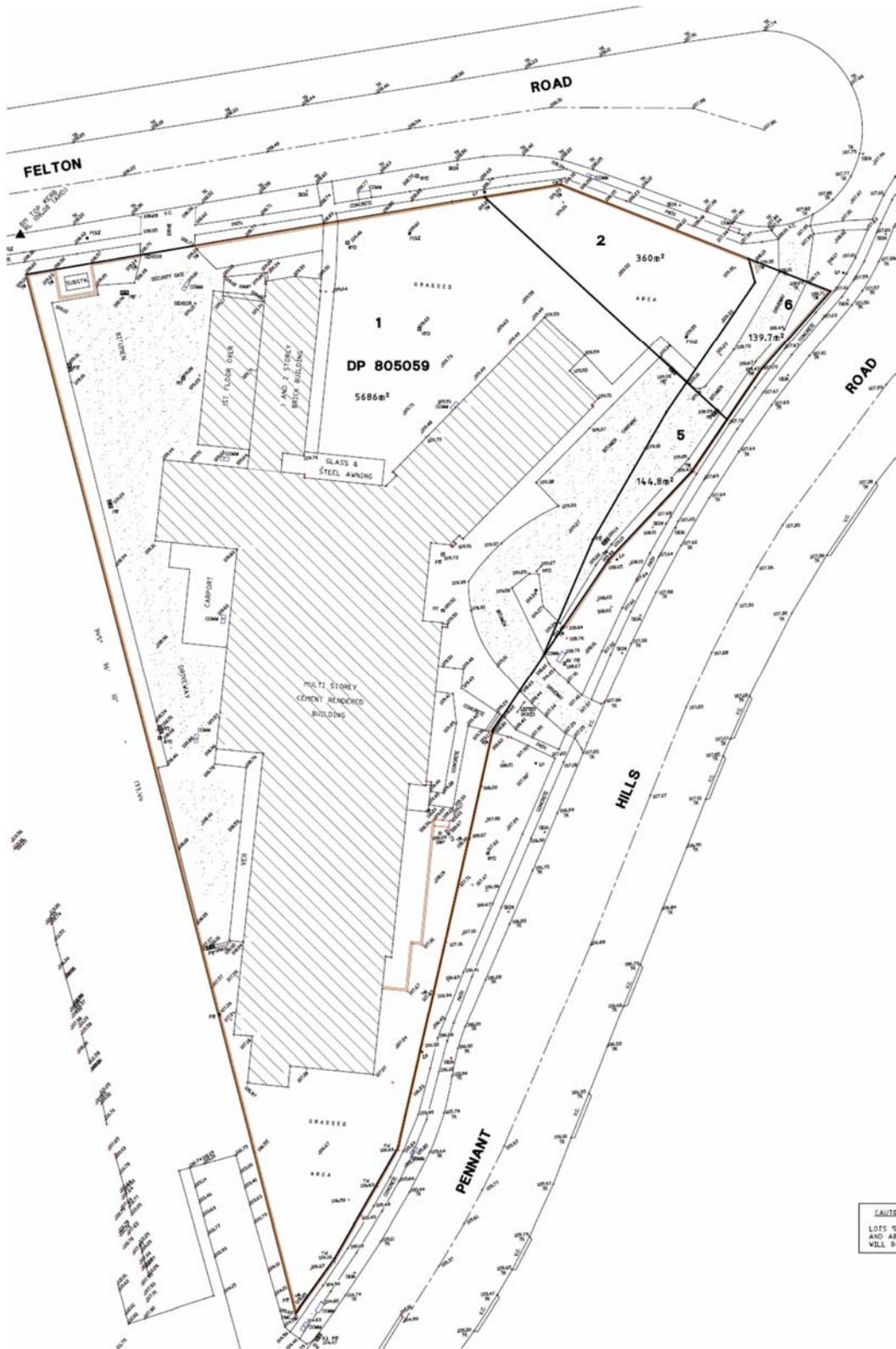
The subject site is depicted on Figure 1 and has a total area of approximately 5,765m<sup>2</sup> (without road widening area) with an existing commercial floor area of approximately 2,000m<sup>2</sup>. The site is described as Lots 1, 2, 5 and 6 in Deposited Plan 805059. It should be noted that Lots 5 and 6 are required for future widening of Pennant Hills Road. An extract from the site survey is provided in Figure 2.

Vehicle access to the existing commercial car parking spaces is currently available from both Pennant Hills Road (entry and exit via a single driveway) and Felton Road via two entry and exit driveways.



# LOCATION

Fig 1



CAUTION  
LOTS 6  
AND 8B  
WILL BE

**SITE**  
Fig 2

### 3. EXISTING CONDITIONS

Pennant Hills Road is classified a State Road under the care and control of the Roads and Maritime Services (RMS). Felton Road and Baker Street are classified Local Roads in this area.

The main features of the existing traffic controls in the vicinity of the site are:

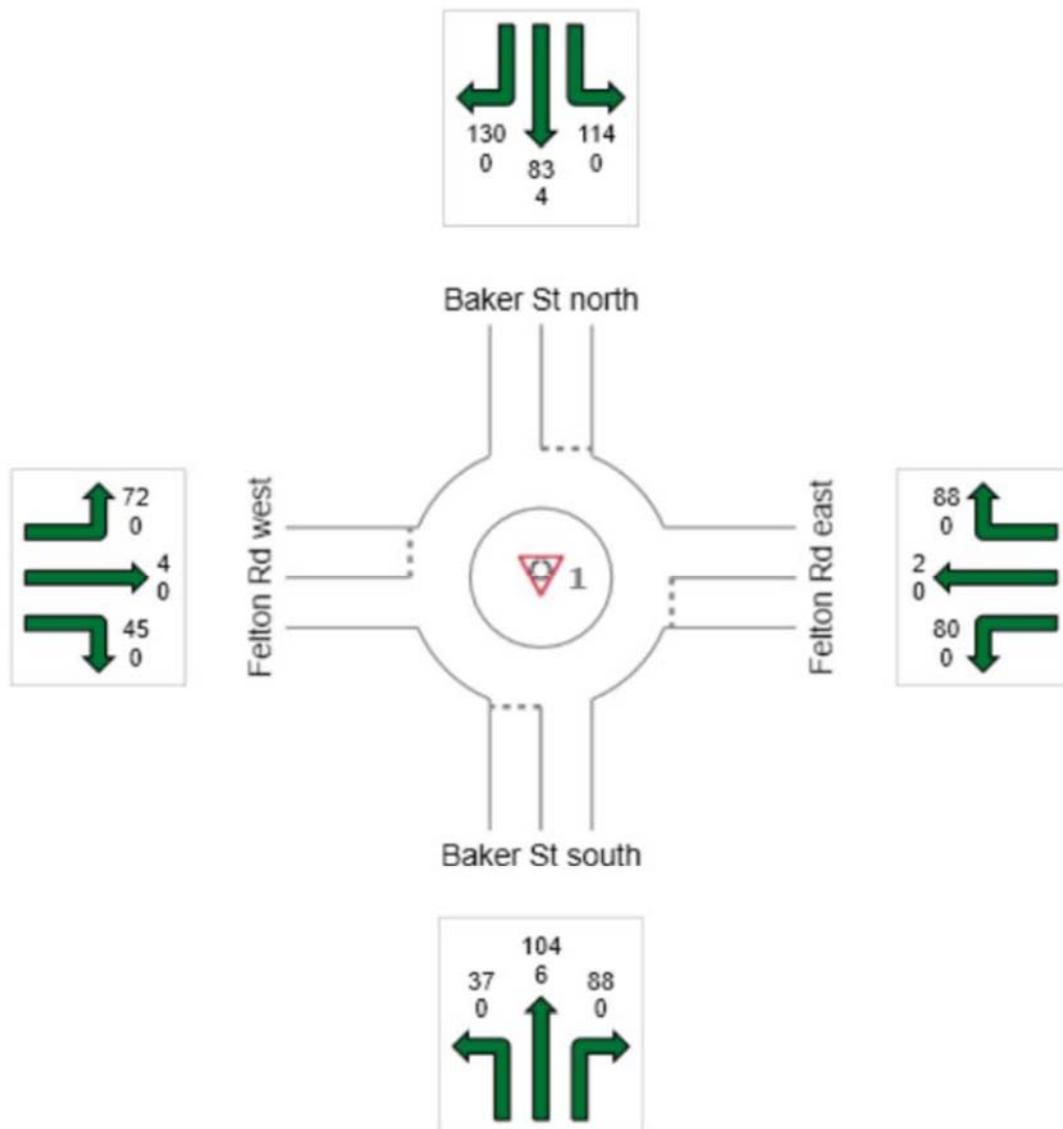
- Traffic signals at the intersection of Pennant Hills Road and Jenkins Road. These signals also provide an early start phase and lane for buses travelling easterly on Pennant Hills Road.
- Traffic signals at the intersection of Pennant Hills Road and Adderton Road.
- Felton Road is terminated at Pennant Hills Road with a cul-de-sac.
- A 60 Km/h speed limit exists on Pennant Hills Road.
- Roundabout at the intersection of Baker Street and Felton Road.
- A 50 km/h speed limit exists on Felton Road and Baker Street.
- A left turn bay on Pennant Hills Road at the front of the site.

Traffic Solutions Pty Ltd has been advised that traffic signals have been approved at the intersection of Pennant Hills Road and Baker Street as part of another development believed to be required as part of a Baptistcare residential flat development at 264-268 Pennant Hills Road, Carlingford. These signals will alter the trip routes of some drivers and affect the volumes on Baker Street, however, no forecast traffic volume transference has been forecast by Council at this time.

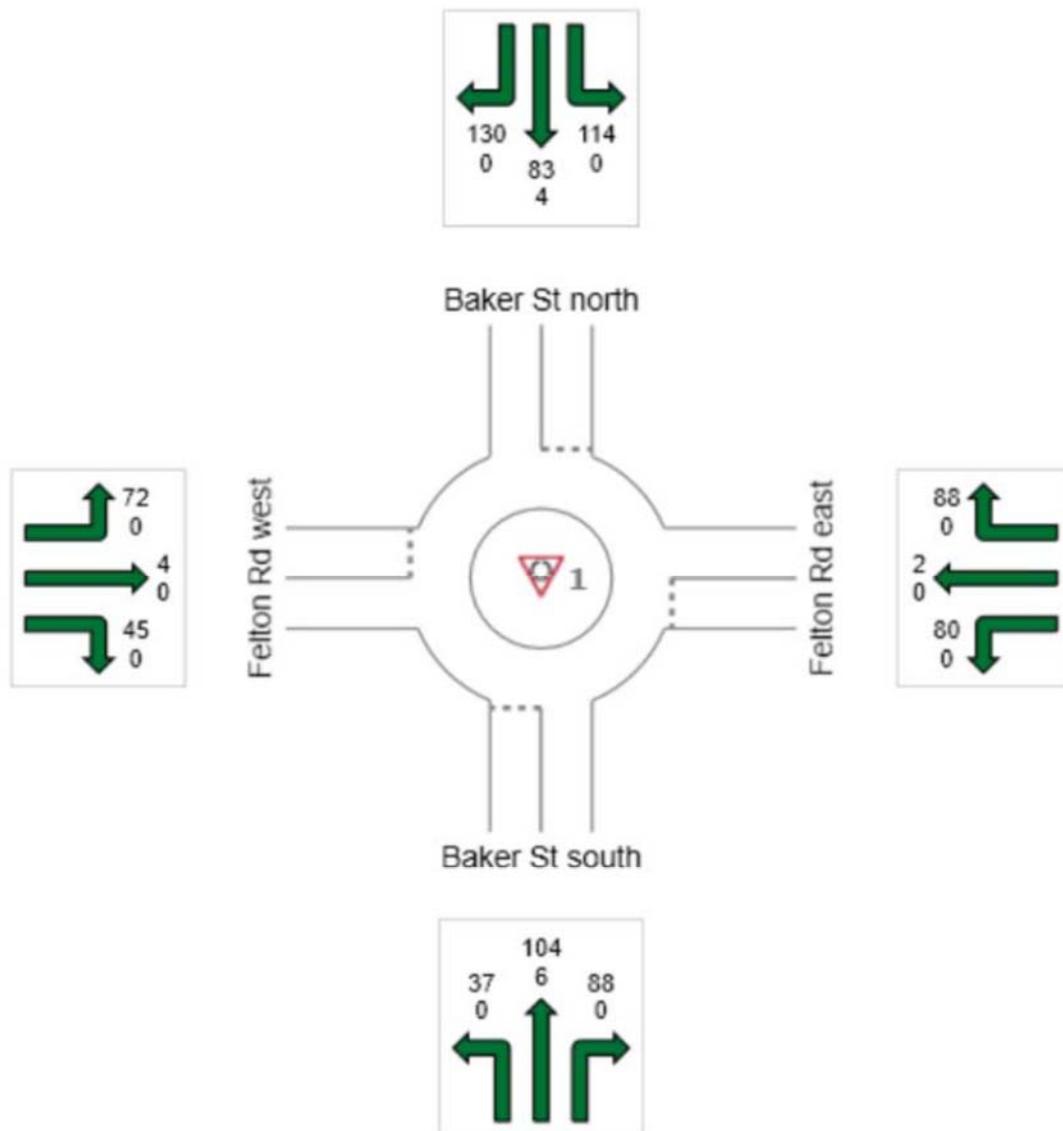
Data on the vehicle and pedestrian movements at Baker Street and Felton Road intersection have been collected by surveys undertaken by Roar Data Pty Ltd as part of this study from 7.00am - 9.00am and 2.30pm – 5.30pm on Tuesday 13<sup>th</sup> October 2020 (not during covid lockdowns) at the intersections of Baker Street and Felton Road. Conditions on this day were described by the traffic counting firm as partly cloudy with no unusual circumstances encountered.

The detailed results of the surveys are attached as Appendix A. The morning and evening peak hour flows at each intersection is depicted in Figure 3 and 4 in the following pages.

Previous, on site observations (prior to covid restrictions) indicated that during the drop off and pick up times associated with the start and finish times of the James Ruse School that Felton Road is experiencing some congestion for a short period, however, the peak hour traffic generation of the indicative development proposal on the subject site is unlikely to coincide.



**Existing  
Morning Peak  
Hour Flows**  
 Fig 3



**Existing Evening Peak Hour Flows**

Fig 5

## 4. KEY ISSUES

### 4.1 VEHICLE ACCESS

Two basement levels will provide the required onsite parking spaces and vehicle access via a 11.5m wide driveway to Felton Road. This driveway also serves as access for a truck to remove refuse and also delivery/removalist vehicles. No vehicle access is proposed to Pennant Hills Road. The proposed driveway location is satisfactory and will provide good sight distance in both directions along Felton Road. The available sight distance easily exceeds the desirable 69m distance suggested by AS/NZS 2890.1:2004 for 50 km/h.

A combined off street loading/garbage area is proposed off Felton Road.

### 4.2 TRAFFIC

An estimation of the traffic generation of the indicative development scheme can be calculated by reference to the Roads and Traffic Authority's 'Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation' of October 2002. The guide specifies the following peak hour generation rates for gymnasium and child care centres developments and high density residential flat buildings:

#### **Gymnasiums.**

##### **Metropolitan Regional (CBD) Centres.**

Evening Peak Hour Vehicle Trips = 3 trips per 100m<sup>2</sup> GFA .

##### **Metropolitan Sub Regional Areas.**

Evening Peak Hour Vehicle Trips = 9 trips per 100m<sup>2</sup> GFA.

The peak generation generally occurs between 6.00pm and 7.00pm on a weekday evening.

#### **Child Care Centres**

Centre Type	Peak Vehicle Trips/Child		
	7.00-9.00am	2.30-4.00pm	4.00-6.00pm
Pre-school	1.4	0.8	--
Long day care	0.8	0.3	0.7
Before/after care	0.5	0.2	0.7

#### **Office and Commercial**

Evening peak hour vehicle trips = 2 per 100m<sup>2</sup> gross floor area

With regards to the residential component of the proposal the Roads and Maritime Services Technical Direction 'Guide to Traffic Generating Developments, Updated surveys TDT 2013/14' of May 2013. The guide specifies the following average peak

hour generation rates for High Density residential flat buildings in Sydney:

AM Peak Hour Vehicle Trips	=	0.19/unit
PM Peak Hour Vehicle Trips	=	0.15/unit

Considering the location of the proposal, adjacent Carlingford Railway Station the metropolitan sub-regional centre rate will be utilised for the gymnasium component of the proposal. Accordingly, the estimated traffic generation of the site calculates as:

#### AM peak

520m <sup>2</sup> gymnasium @ 3 trips/100m <sup>2</sup>	=	15.6 trips (assumed to be same as 6.00pm – 7.00pm)
1120m <sup>2</sup> commercial @ 2 trips/100m <sup>2</sup>	=	22.4 trips (assumed to be same as PM)
90 place child care centre @ 0.8 trips/child	=	72 trips
97 residential units @ 0.19 trips/unit	=	18.4 trips
POTENTIAL TOTAL TRIPS	=	128.4 peak hour trips

#### PM peak

520m <sup>2</sup> Gymnasium @ 3 trips/100m <sup>2</sup>	=	15.6 trips
1120m <sup>2</sup> commercial @ 2 trips/100m <sup>2</sup>	=	22.4 trips
90 place child care centre @ 0.7 trips/child	=	63 trips
97 residential units @ 0.15 trips/unit	=	14.6 trips
POTENTIAL TOTAL TRIPS	=	115.6 peak hour trips

It should be noted that the above potential traffic generation rates are considered to be an absolute worse case scenario due to the fact that the peak hour generation of a gymnasium occurs before and after the weekday commuter peak hours. Further the existing traffic generation of the site has NOT been deducted from the road network modelling. Notwithstanding, the worst case scenario traffic generation rate will be modelled against the existing on street peak hours to ensure a robust assessment.

Forecast flow traffic generation distribution assumptions are as follows:

1. 80/20 split (depart/approach) for residential units in AM peak reverse in PM peak.
2. 20/80 split (depart/approach) for commercial floor space in AM peak reverse in PM peak.
3. 50/50 split (approach/depart) for gymnasium and child care centre components

Table 4.1 provides the estimated traffic flows for the proposal:

Road	AM Peak		PM Peak	
	Approach	Departure	Approach	Departure
Felton Road	65	63	56	60

To assess the impact of the potential traffic generation on the intersection of Felton Road and Baker Street the estimated peak hour approach and departure vehicle trips have been assigned proportionally to the roundabout on the basis of existing traffic flows.

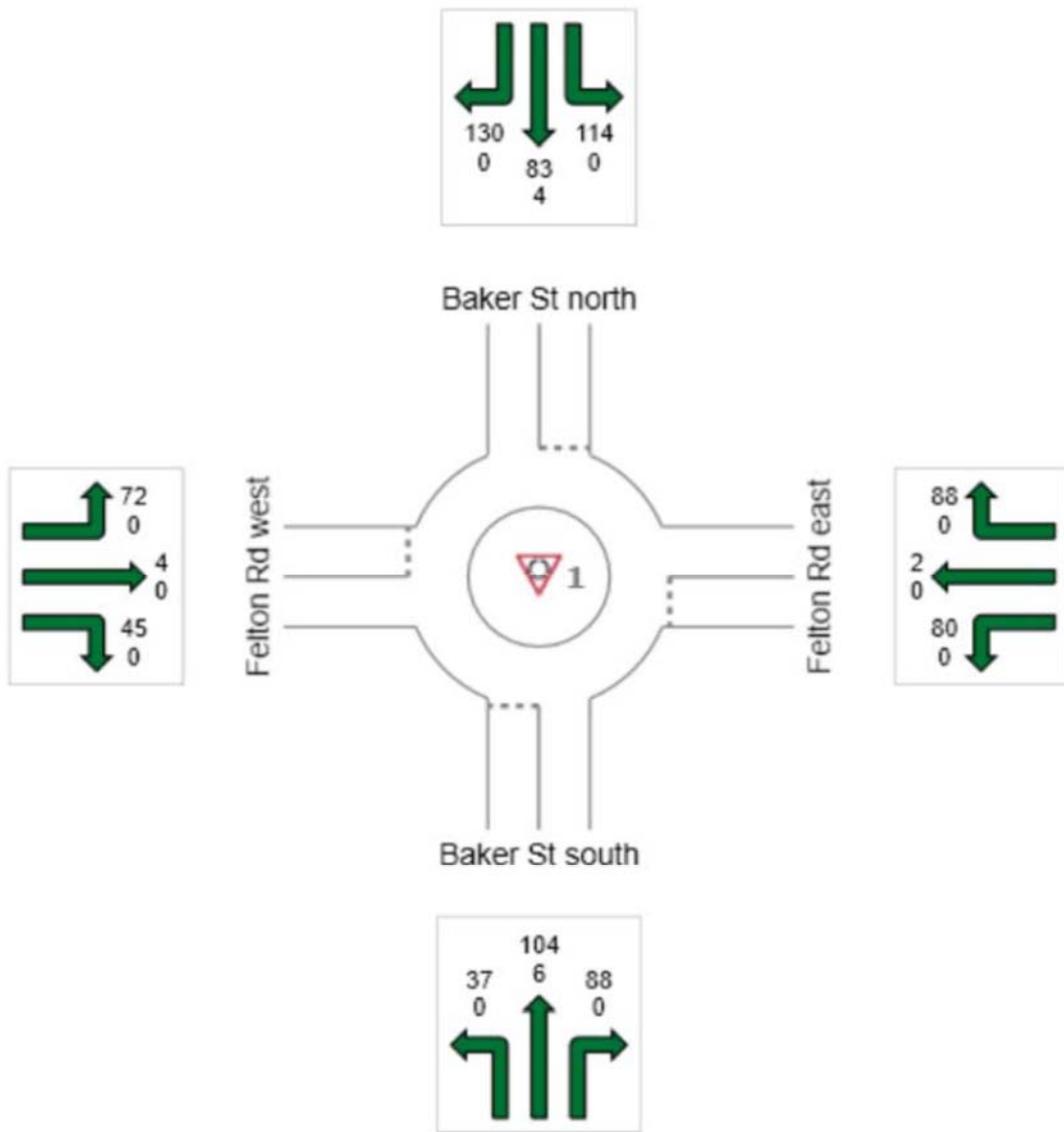
Figures 5 and 6 depict the potential morning and afternoon peak hour traffic volumes modelled.

Using SIDRA a software programme developed for the purpose of analysing signalised, roundabout and sign controlled intersections, a comparison of intersection performance between the existing and projected traffic demands during the morning and evening peak hours upon the intersection has been modelled. The table below are the results of the intersection modelling and attached as Appendix B are the SIDRA summary result sheets.

	<b>Results of SIDRA analysis – Intersection of Baker Street and Felton Road</b>			
	Existing		Proposed	
	AM	PM	AM	PM
<b>Level of Service</b>	A	A	A	A
<b>Degree of Saturation</b>	0.302	0.172	0.351	0.179
<b>Total Average Delay (sec/veh)</b>	6.4s	5.6s	6.7s	5.9s

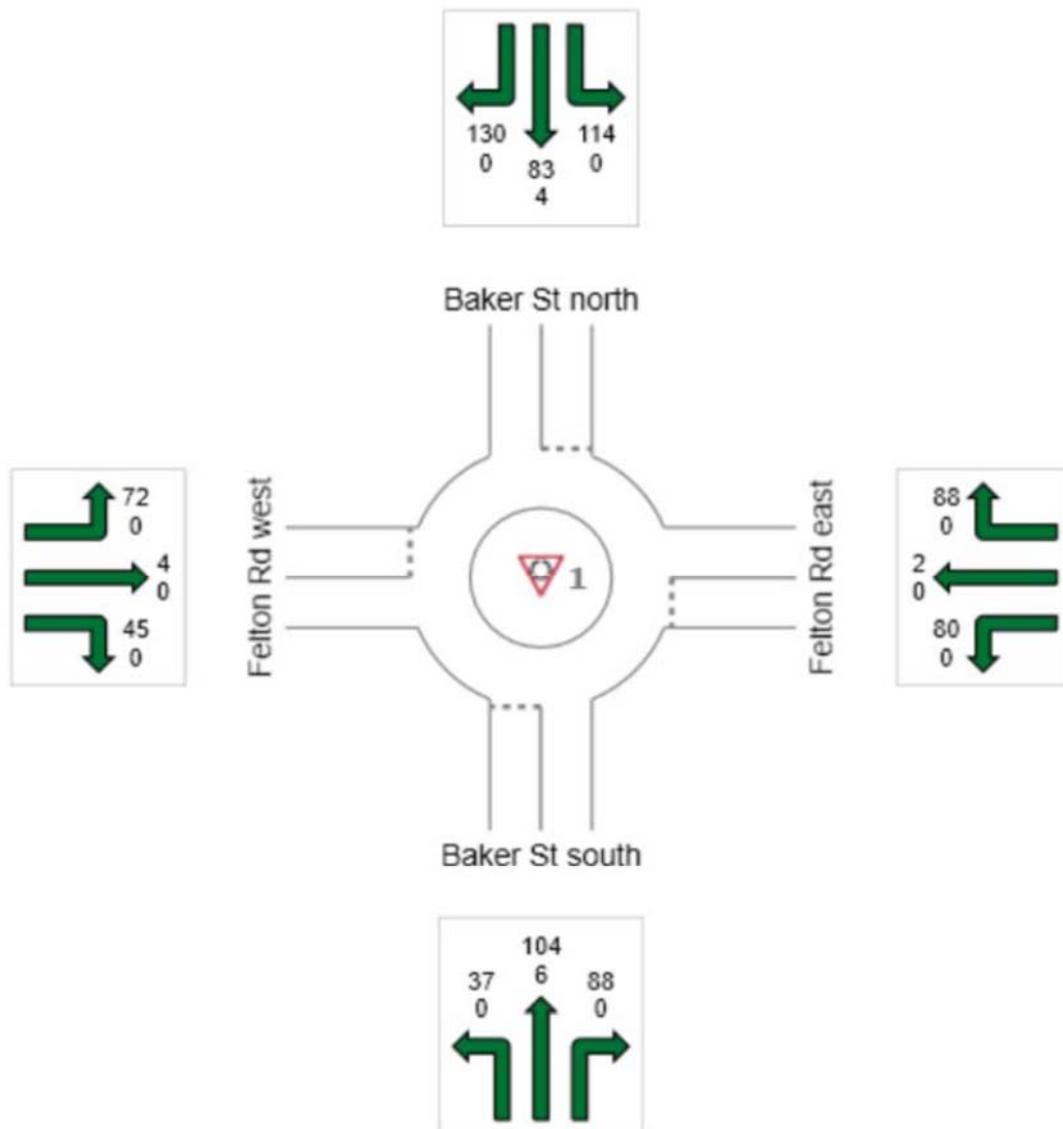
The results of the SIDRA analysis reveal that:

- The very good Level of Service at the intersection of Felton Road and Baker Street will not change with the estimated additional traffic generation of the indicative development scheme.
- The additional traffic demand on the intersections of Felton Road and Baker Street, as a consequence of the indicative development scheme will only alter the Degree of Saturation and Total Average Delay minutely at each intersection.
- The indicative proposal traffic generation can easily be accommodated within the current road network. The road network has ample capacity for the proposal and an increase in residential component of the proposal, at this location could be expanded to 120 units or greater.



**Potential morning peak hour flows**

Fig 5



**Potential evening peak hour flows**  
Fig 6

## 5. CONCLUSIONS

The preceding analysis has demonstrated that:

- The vehicle access point proposed to serve the development are suitably located and will provide satisfactory sight distance along Felton Road.
- The very good Level of Service at the intersection of Felton Road and Baker Street will not change with the estimated additional traffic generation of the indicative development scheme.
- The additional traffic demand on the intersections of Felton Road and Baker Street, as a consequence of the indicative development scheme will only alter the Degree of Saturation and Total Average Delay minutely at each intersection.
- The indicative proposal traffic generation can easily be accommodated within the current road network. The road network has ample capacity for the proposal and an increase in residential component of the proposal, at this location could be expanded to 120 units or greater.

Therefore, the indicative development scheme for the subject site is considered to be acceptable and is supported by Traffic Solutions Pty Ltd.

**APPENDIX A      TRAFFIC COUNTS**

**APPENDIX B**      SIDRA OUTPUT SUMMARY FILES

**From:** RATHAN Pahee [Pahee.RATHAN@rms.nsw.gov.au]  
**Sent:** Friday, April 04, 2014 2:48 PM  
**To:** 'Danny Jones'  
**Subject:** RE: 241-245 Pennant Hills Road Carlingford  
**Attachments:** 04042014142744-0001.pdf

Hi Danny,

I refer to your email below regarding the proposed rezoning of land at 241-245 Pennant Hills Road, Carlingford and provides the following comments for your consideration:

1. Please find attached plans showing the road reservation (in grey colour) and land required for road widening (in pink colour).
2. The land included for FSR is determined by the consent authority. However, Roads and Maritime Services (Roads and Maritime) would support your application for the inclusion of land dedicated for road widening in FSR calculations.
3. Roads and Maritime would not object to left-in only garbage vehicle access from Pennant Hills Road to service the site. However, Roads and Maritime may consider a commercial traffic access if a deceleration lane is provided outside the land required for road widening. The access needs to be restricted to left-in and left-out only by means of physical measures.

I trust this information is of assistance.

If you like to discuss this matter further, please call me on 8849 2219.

Regards

**Pahee Rathan**

Senior Land Use Planner

Land Use | Network & Safety

T 02 8849 2219 F 02 8849 2918

[www.rms.nsw.gov.au](http://www.rms.nsw.gov.au)

Roads and Maritime Services  
27 Argyle Street Parramatta NSW 2150 | PO Box 973 PARRAMATTA CBD NSW 2150

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**From:** Danny Jones [<mailto:danny@planningdirection.com.au>]

**Sent:** Thursday, 27 March 2014 4:41 PM

**To:** Development Sydney

**Subject:** 241-245 Pennant Hills Road Carlingford

Hi Pahee

Thank you for your time today- appreciated.

Please find attached our initial planning concept plans. Please note that they will need to be revised to reflect the matters discussed today.

It would be appreciated if you could forward correspondence to me regarding the RTAs position/requirements as soon as possible so that I can progress the proposal with The Hills Council.

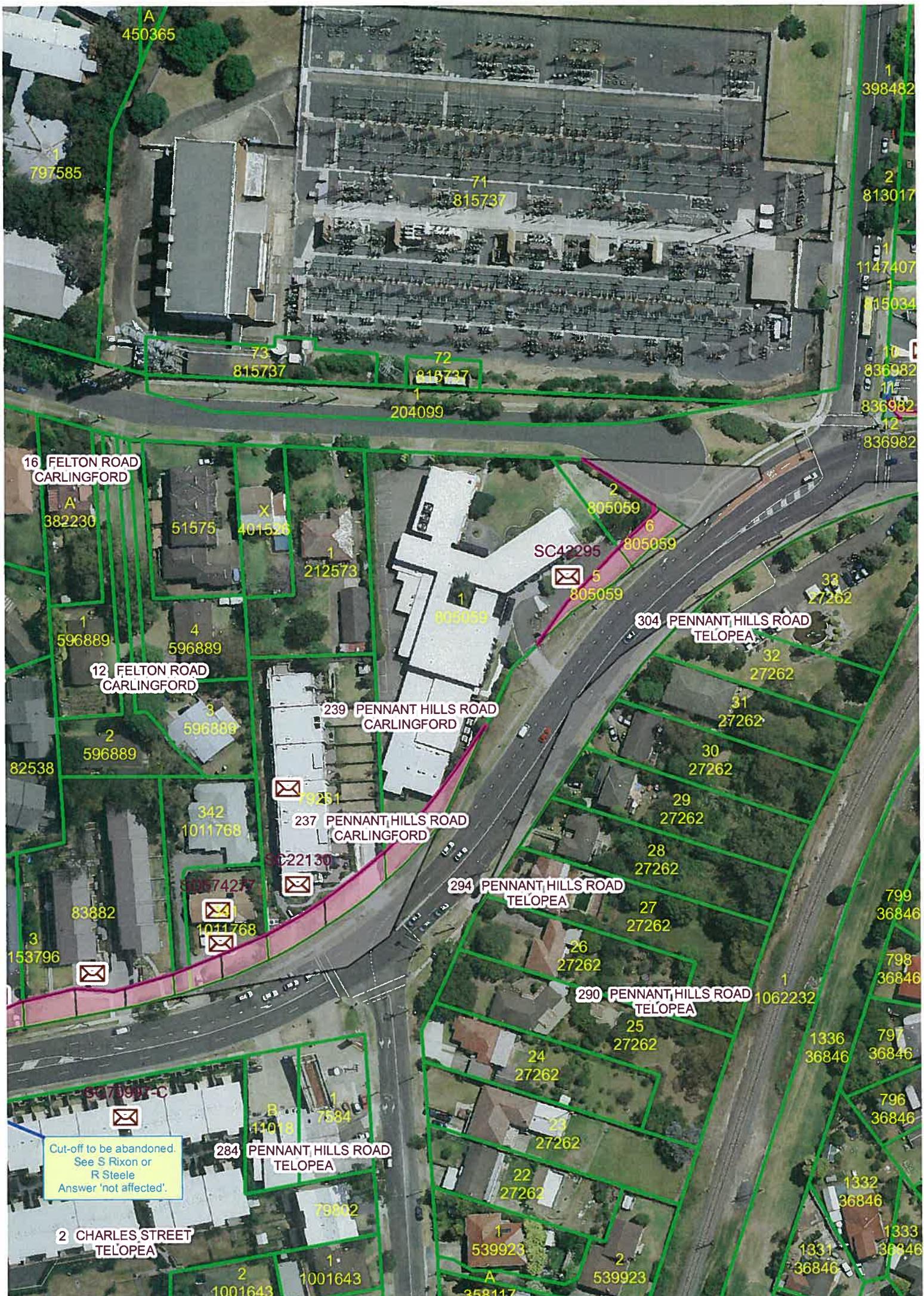
Can you confirm the following in your correspondence:

1. The dimensions/area of road widening affecting the southern corner of the site.
2. Confirmation as to whether road widening is required in the northern corner of the site (the area that is zoned B2 rather than proposed road widening). I would assume that if required it would correlate with lots 5 and 6 on the subdivision plan.
3. Confirmation that you support the ability of the developer to utilize the floor space potential of the road widening in the development of the site on the strict proviso that the land required for road widening is dedicated to the RTA as no cost at DA stage. As discussed this will ensure that the developer is not penalized by the road widening affectation, ensures that the RTA gets the widening at no cost, and avoids any potential for protracted negotiations and potential disagreements down the track about land values and compulsory acquisition. Basically it provides a clear cut solution whereby all parties achieve their desired outcome in a simple and straightforward manner.
4. Confirmation on the vehicle access restrictions to Pennant Hills Road. Basically I think the position was that the only access that would be considered was for commercial traffic (only if a slip lane was provided within the site boundaries as determined by the property boundaries after road widening) or garbage vehicle access only from Pennant Hills Road (a slip lane would not be required but the servicing hours would be limited so as not to conflict with peak traffic periods)

Thanks again for your assistance- once I have your response I can refine the design and hold further discussions with Council

Regards Danny  
0414254882

**IMPORTANT NOTICE:** This e-mail and any attachment to it are intended only to be read or used by the named addressee. It is confidential and may contain legally privileged information. No confidentiality or privilege is waived or lost by any mistaken transmission to you. Roads and Maritime Services (RMS) is not responsible for any unauthorised alterations to this e-mail or attachment to it. Views expressed in this message are those of the individual sender, and are not necessarily the views of RMS. If you receive this e-mail in error, please immediately delete it from your system and notify the sender. You must not disclose, copy or use any part of this e-mail if you are not the intended recipient.



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237 PENNANT HILLS ROAD  
CARLINGFORD

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Cut-off to be abandoned.  
See S Rixon or  
R Steele  
Answer 'not affected'.

284 PENNANT HILLS ROAD  
TELOPEA

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2 CHARLES STREET  
TELOPEA

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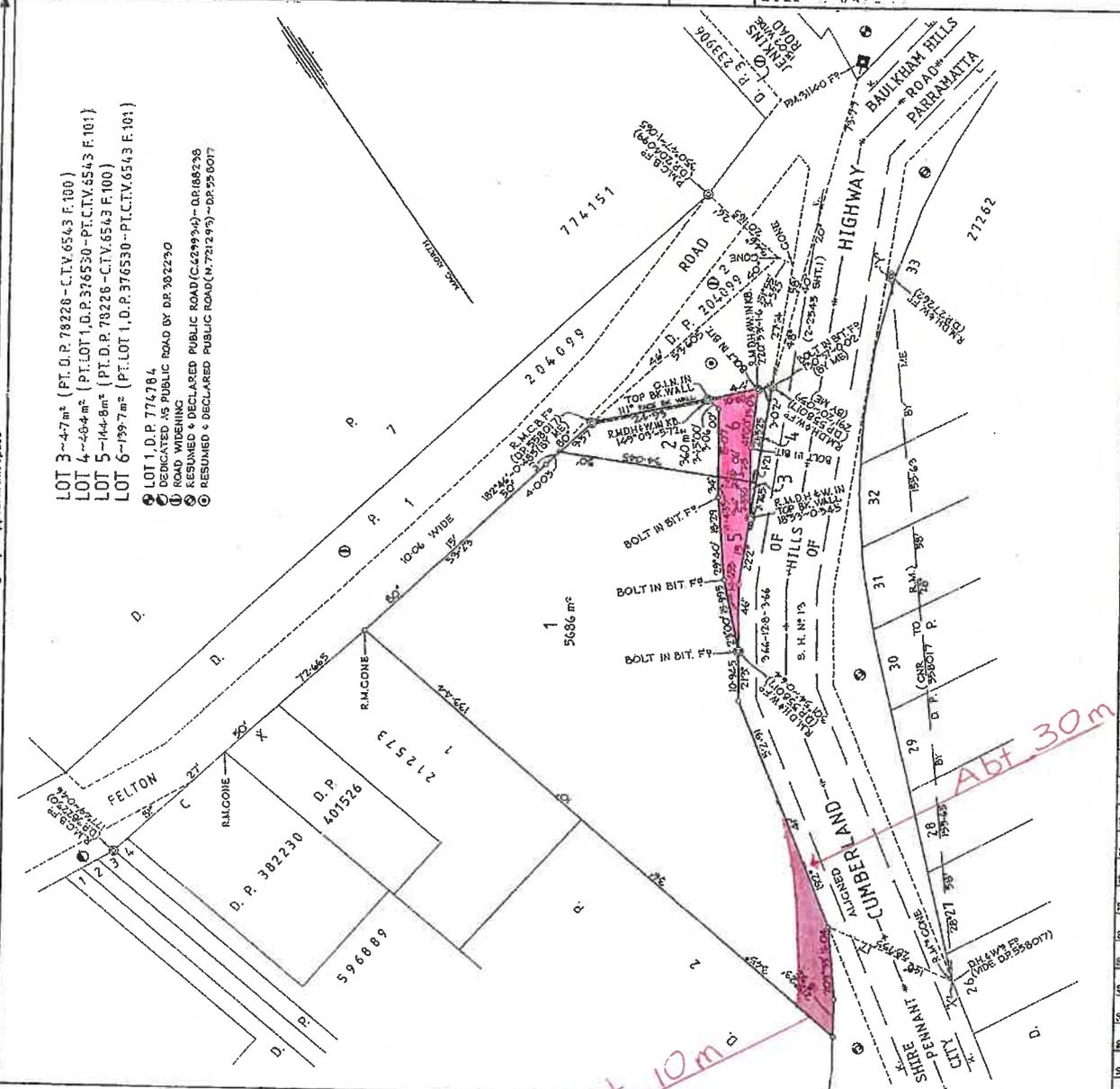


PLAN FORM 2

**NOTICE:** THIS PLAN AND STATEMENTS IS INTENTION TO OFFER A ROAD TO BE OPENED TO PUBLIC USE. THE ROAD IS SUBJECT TO THE REQUIREMENTS OF THE ROAD ACT, 1987 AND THE ROAD REGULATIONS, 1987. THE ROAD IS SUBJECT TO THE REQUIREMENTS OF THE ROAD ACT, 1987 AND THE ROAD REGULATIONS, 1987. THE ROAD IS SUBJECT TO THE REQUIREMENTS OF THE ROAD ACT, 1987 AND THE ROAD REGULATIONS, 1987.

**Crown Lands Office Approval**  
 PLAN APPROVED: \_\_\_\_\_  
 APPROVED OFFICER: \_\_\_\_\_  
 DATE: \_\_\_\_\_

**Council Clerk's Certificate**  
 I hereby certify that the above plan has been approved by the Council of the City of Parramatta in accordance with the provisions of the Road Act, 1987 and the Road Regulations, 1987. The plan is subject to the requirements of the Road Act, 1987 and the Road Regulations, 1987. The plan is subject to the requirements of the Road Act, 1987 and the Road Regulations, 1987.



WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

R.T.A. FILE : 19/7/11/2040

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General (this day, 11th September, 1990)

10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
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OFFICE USE ONLY  
**DP 805059**

Registered: 10.9.1990

C.A.: \_\_\_\_\_

Title System: TORRENS

Purpose: PROPOSED ROAD AND RESIDUE

Ref. Map: U 0060-028

Last Plan: DP 76229, DP 716930

PLAN OF LAND TO BE ACQUIRED FOR THE PURPOSES OF THE STATE ROADS ACT, 1986.

Lengths are in metres. Reduction Ratio: 1:500

Name of Site: BAULKHAM HILLS

City: CARLINGFORD

Locality: FIELD OF MARS

Parish: CUMBERLAND

County: \_\_\_\_\_

This project is a survey of land (State of New South Wales) under the provisions of the Survey Act, 1981 and the Survey Regulations, 1981. The survey was conducted by Mark Thomas Gordon, a registered surveyor, on the 15th May 1990. The survey was conducted in accordance with the provisions of the Survey Act, 1981 and the Survey Regulations, 1981. The survey was conducted in accordance with the provisions of the Survey Act, 1981 and the Survey Regulations, 1981.

MARK THOMAS GORDON  
 REGISTERED SURVEYOR  
 15/05/1990

Panel for use only for information of public reserves, drainage reserves, easements or restrictions as to use.

OTS 3.4.4 ARE REQUIRED FOR ROAD ACQUISITION AND THE REMOVAL OF PUBLIC ROAD

OTS 3.4.4 WILL ULTIMATELY BE REQUIRED FOR ROAD AND AFTER ACQUISITION AND THE REMOVAL OF PUBLIC ROAD

OTS 3.4.4 INCLUSIVE SUPERSEDE OTS 142, D.S.P. PLAN 55017.

APPROVED: \_\_\_\_\_  
 CHIEF SURVEYOR  
 ROADS AND TRAFFIC AUTHORITY

Plan Drawing only to appear in this space

- LOT 3 - 4.7 m<sup>2</sup> (PT. LOT 1, D.P. 78228 - C.T.V. 6543 F.100)
- LOT 4 - 4.4 m<sup>2</sup> (PT. LOT 1, D.P. 376530 - P.L.C.T.V. 4543 F.101)
- LOT 5 - 14.4 m<sup>2</sup> (PT. LOT 1, D.P. 78228 - C.T.V. 6543 F.100)
- LOT 6 - 139.7 m<sup>2</sup> (PT. LOT 1, D.P. 376530 - P.L.C.T.V. 6543 F.101)
- LOT 1, D.P. 774384
- DEDICATED AS PUBLIC ROAD BY DP 382290
- ROAD WIDENING
- RESUMED & DECLARED PUBLIC ROAD (N. 721293) - DP 86298
- RESUMED & DECLARED PUBLIC ROAD (N. 721293) - DP 258077